

Tech Tip 107

Platemaking Negative Exposure-Control Guides

The MacDermid liquid photopolymer exposure-control guides (ECGs) are precision-made film negatives. They are designed to assist platemakers in obtaining optimum plate exposures in the preparation of halftone, process color, and fine-line printing plates. The ECGs are available in 45, 55, 65, 75, 85, 100, 120, and 150-line screens in film thicknesses of four (4) and seven (7) mils to match production film thickness. ECGs are available from your MacDermid Technical Representative

USE OF MACDERMID ECG

Keep the exposure-control guide negatives clean at all times. When not in use, keep them in the protective envelope provided.

- 1) Select the ECG that matches the line screen ruling and the thickness of your production negatives. It is advisable that the transmission density of the production negatives be measured. Density specifications are as follows:

DMIN	DMAX
≤ 0.05	≥ 4.00

The density (DMAX) for the black area of the negative is 4.00; the density (DMIN) in the clear area of the negative is 0.05. The clear area of the film is the most critical for proper and consistent plate exposure of halftone, process color, and fine-line images.

- 2) Examine the production platemaking negatives with a measuring magnifier to determine the smallest printable halftone highlight dot value (not isolated individual dots) or the finest positive or reverse linework. Use the correct line screen, halftone value dot measurement chart on the back of this page for precise measurement of production negatives. A transmission densitometer with a percent dot area meter can be used if it is calibrated to the MacDermid ECG. Compare the size of these halftone values (highlight, quartertone, etc.) with the target in the ECG negative of the same line screen ruling.
- 3) Put the production negative on the MacDermid liquid exposure unit lower glass and place the ECG (right reading, emulsion side up) adjacent to it.
- 4) Set the background exposure time (T1) to create the desired background buildup. Set the T2 exposure time at the minimum required to hold the highlight/shadow dot value targets in the ECG comparable to the values in the production negative.



EXAMPLES

Halftone or process color negatives: If the smallest printable highlight dot in the production negative is 3%, use the minimum T1 and T2 exposure to build up the desired background and hold the 3% dot in the ECG. Make certain that the 1% and 2% dots drop out. This will ensure that the smallest (3%) dot in the production negative is held in the finished plate.

Line Negatives: Find the smallest fine line in the production negative and measure its size. If, for example, it is 6 mils, expose the plate to hold the 6-mil target line and drop out the 1- through 5-mil target lines in the ECG.

EXPOSURE-CONTROL GUIDE NEGATIVE
Dot Diameter^(a) for Specific Dot Percent and Line Screen

Percent	Line Screen			
	85	100	120	150
Highlight				
1	1.33	1.13	0.94	0.74
2	1.87	1.59	1.33	1.06
3	2.30	1.95	1.62	1.30
4	2.65	2.26	1.88	1.50
5	2.97	2.53	2.10	1.68
6	3.25	2.76	2.30	1.84
7	3.51	2.99	2.48	1.99
8	3.76	3.19	2.66	2.13
9	3.98	3.39	2.82	2.26
10	4.20	3.57	2.98	2.38
Shadow^(b)				
90	4.20	3.57	2.98	2.38
91	3.98	3.39	2.82	2.26
92	3.76	3.19	2.66	2.13
93	3.51	2.99	2.48	1.99
94	3.25	2.76	2.30	1.84
95	2.97	2.53	2.10	1.68
96	2.61	2.26	1.88	1.50
97	2.30	1.95	1.62	1.30
98	1.87	1.59	1.33	1.06
99	1.33	1.13	0.94	0.74

(a) Diameter expressed in mils for round dot screen configuration

(b) Reverse dot (dark area diameter) measurement in negative



CORRUGATED EXPOSURE-CONTROL GUIDE
Dot Diameter^(a) for Specific D

Line Screen					
Percent	45	55	65	75	85
Highlight					
1	2.51	2.05	1.74	1.50	1.33
2	3.55	2.90	2.46	2.13	1.87
3	4.34	3.55	3.00	2.61	2.30
4	5.02	4.10	3.48	3.01	2.65
5	5.61	4.59	3.88	3.36	2.97
6	6.14	5.03	4.25	3.69	3.25
7	6.63	5.43	4.59	3.98	3.51
8	7.09	5.80	4.91	4.25	3.76
9	7.52	6.15	5.21	4.51	3.98
10	7.93	6.49	5.50	4.76	4.20
Shadow^(b)					
90	7.93	6.49	5.50	4.76	4.20
91	7.52	6.15	5.21	4.51	3.98
92	7.09	5.80	4.91	4.25	3.76
93	6.63	5.43	4.59	3.98	3.51
94	6.14	5.03	4.25	3.69	3.25
Corner or Blocks					
25 (1/4 Tone)	12.54	10.26	8.68	7.53	6.63
50 (Midtone) ^(b)	17.73	14.51	12.28	10.64	9.39
75 (3/4 Tone) ^(b)	12.54	10.26	8.68	7.53	6.36

(a) Diameter expressed in mils for round dot screen configuration

(b) Reverse dot (dark area diameter) measurement in negative

